Description

Multi-purpose element for sliding metal racks located inside furniture.

The present patent application for industrial invention relates to an element for sliding racks made of metal wire and located inside furniture, in particular modular kitchen cabinets.

As it is known, kitchen cabinets are commonly equipped with removable internal racks, whose bottom consists in a grid obtained by soldering multiple rod irons, while the bearing structure is usually made up of a frame obtained with metal profiles or pressed metal plates suitably shaped to act as slide guides.

More precisely, the bearing frame of the racks lays and slides on two lateral pairs of wheels that in turn slide inside a rail located in a fixed counter-guide, tightened on the inside of the two opposite sides of the cabinet.

Special telescopic guides are normally used to provide for better extraction of the rack from its housing. The guides are inserted one into each other, with the external guide tightened to the cabinet wall and the internal guide to the bearing frame of the rack.

This type of telescopic guides ensures balanced, smooth and noiseless sliding of the rack, compared to the system using two sliding wheels between a mobile guide (that coincides with the rack frame) and a fixed counter-guide.

However, a disadvantage of this type of telescopic guides is represented by their unpleasant aspect when the rack has been completely extracted.

An additional inconvenience of practical nature is represented by the fact that the use of these telescopic guides requires the presence of suitable means to fix the guides to the rack frame.

The main purpose of the present invention is to provide a solution to both inconveniences, through the realisation of an element capable of acting as cover for the telescopic guides and at the same time as connection element between

guides and rack.

More precisely, the cover for telescopic guides is also used as bearing element in the rack structure, being an integral part of it.

The cover can also be used to connect the rack to a front panel in order to realise a drawer, with a metal wire rack in its internal compartment.

To that end the cover has been provided with suitable seats and holes that can be used to fit and fix a special bracket, capable of being tightened on the internal face of the front panel.

The bracket is supplied as accessory with the cover.

Any type of frame, side or upright can be fixed above the cover to realise high racks or racks with multiple shelves.

The multi-purpose element for sliding metal racks according to the present invention consists in a box-type bar with upturned-U cross section that can exactly house and hide a telescopic guide.

The box-type bar is mounted on both sides of a metal rack, becoming an integral part of the rack structure.

The rear end of the box-type bar is open in order to act as entrance for the telescopic guide, whose external rod is fixed and tightened on the cabinet side.

Once the guide has been inserted into the open rear end of the bar, the rack can be pushed forward to completely insert the guide into the bar. The bar is provided with a coupling latch in order to automatically stop the guide inside the bar at the end of its forward travel, thus preventing the box-type bar from exiting the telescopic guide when the rack has been completely extracted.

As mentioned above, the front end of the bar, on the upper wall, features a seat for a special bracket that can be screwed into the internal face of a front panel.

For major clarity the description of the multi-purpose element for sliding metal racks according to the present invention continues with reference to the

enclosed drawings, which are intended for purposes of illustration and not in a limiting sense, whereby:

- fig. 1 is an exploded perspective of a metal rack with two box-type bars with upturned-U cross section mounted on the sides;
- fig. 2 is an axonometric view of one box-type bar with upturned-U cross sections seen from the back, that is from the opening for the telescopic guide;
- fig. 3 is an axonometric view of an ordinary telescopic guide to be inserted and hidden inside each box-type bar with upturned-U cross section;
- fig. 4 is a section of the box-type bar with plane IV-IV of fig. 3.

With particular reference to figures 2 and 4, the multi-purpose element for sliding metal racks according to the present invention consists in a box-type bar (1) with upturned-U cross section that can exactly house and hide a telescopic guide (2) of known type.

The rear end (1a) of the box-type bar (1) is open in order to act as entrance for the telescopic guide (2), which is provided with a hook (2a) capable of fitting into the niche (3) suitably located in the rear end of the bar (1), as shown in fig. 2.

Once the guide (2) has been completely inserted into the bar (1), the hook (2a) automatically hooks the bar (1) that can no longer be detached from the guide (2) fixed inside the two sides of the cabinet by simply lifting it upwards.

The box-type bar (1) is mounted on both sides of a metal rack (4), becoming an integral part of the structure of the rack (4).

The coupling of the bars (1) to the guides (2) through the hook (2a) eliminates any risk of overturning the rack at the end of the extraction travel.

In the preferred embodiment of the invention, a lateral side (1b) of the bar (1) has some holes (5) (only two in this specific case), in which the ends of an equivalent number of rod irons (6) are forced, becoming an integral part of the rack (4).

This means that the metal rack manufacturer will provide the furniture maker in charge of installing the metal racks in the cabinets with a metal rack (4) already provided with two lateral bearing bars (1).

The furniture maker will only need to fix the telescopic guides (2) inside the two sides of the cabinet.

The installation of the rack (4) inside the cabinet is very simple.

Once the guide (2) has been inserted into the open rear end (1a) of the bar (1), the rack (4) can be pushed forward to completely insert the two guides (2) into the two bars (1). Each bar (1) is provided with a coupling latch in order to automatically stop the guide (2) inside the bar (1) at the end of its forward travel.

The coupling latch prevents the rack (4) from exiting from the guides (2).

With particular reference to figures 3 and 4, it must be noted that the coupling latch is made up of an elastically flexible tongue (7) located on a wall of the bar (1) provided with two notches (8) capable of isolating the intermediate tongue (7).

The internal face of the tongue (7) has a section (7a) with higher thickness provided with a seat (7b) that can house the tooth (2b) located on the internal wall of the guide (2).

When the guide (2) is inserted inside the bar (1), the tooth (2b) interferes with the section (7a) causing the elastic outward flexion of the tongue (7), that snaps back into its idle position as soon as the tooth (2b) passes over the section (7a) and fits into the seat (7b).

On its front end (1d), on the upper wall, the bar (1) is provided with a seat (9) in which a special bracket (10) can be fitted and tightened on the internal face of a front panel (11) to obtain a drawer with a metal rack in its internal compartment.

If the bracket (10) is not mounted on the bar (1), the slot (9) can be covered with a lid (12) forced inside the slot (9).

The description above clearly shows the multi-purpose function of the bar

(1) that can act as:

- bearing structure for the body of the metal rack (4);
- protection cover for the telescopic guides (2);
- support element for brackets (10) used to connect the rack (4) to the front panel (11) of a drawer;
- support element for frames, sides or edges used to realise high racks or racks with multiple shelves.

Claims

1) Multi-purpose element for sliding metal racks located inside furniture, characterised by the fact that it consists in a box-type bar (1) with upturned-U cross section capable of exactly housing and hiding a telescopic guide (2) of known type, and capable of being fixed to the two sides of a metal rack (4), becoming an integral part of it, acting as bearing structure of the body of the metal rack (4).

2) Multi-purpose element for sliding metal racks according to the previous claim, characterised by the fact that a lateral side (1b) of the bar (1) has some holes (5) in which the ends of an equivalent number of rod irons (6) are forced, becoming an integral part of the body of the metal rack (4).

3) Multi-purpose element for sliding metal racks according to claim 1), characterised by the fact that the bar (1) is provided with suitable means in order to prevent it from overturning and exiting from the guide (2), which is in turn provided with suitable co-operating means.

4) Multi-purpose element for sliding metal racks according to claim 3), characterised by the fact that the anti-overturning means consist in a notch (3) located on the rear end (1a) of the bar (1), which is open in order to act as entrance for the telescopic guide (2), which features a hook (2a) capable of fitting into the notch (3).

5) Multi-purpose element for sliding metal racks according to claim 3), characterised by the fact that the anti-loosening means consists in an elastically flexible tongue (7) located on a wall of the bar (1) provided with two notches (8) capable of isolating the intermediate tongue (7), whose internal face has a section (7a) with higher thickness provided with a seat (7b) that can house the tooth (2b) located on the internal wall of the guide (2).

6) Multi-purpose element for sliding metal racks according to the previous claims, characterised by the fact that on its front end (1d) on the upper wall, the

bar (1) is provided with a seat (9) in which a special bracket (10) can be fitted and tightened on the internal face of a front panel (11) to obtain a drawer with a metal rack as internal compartment.

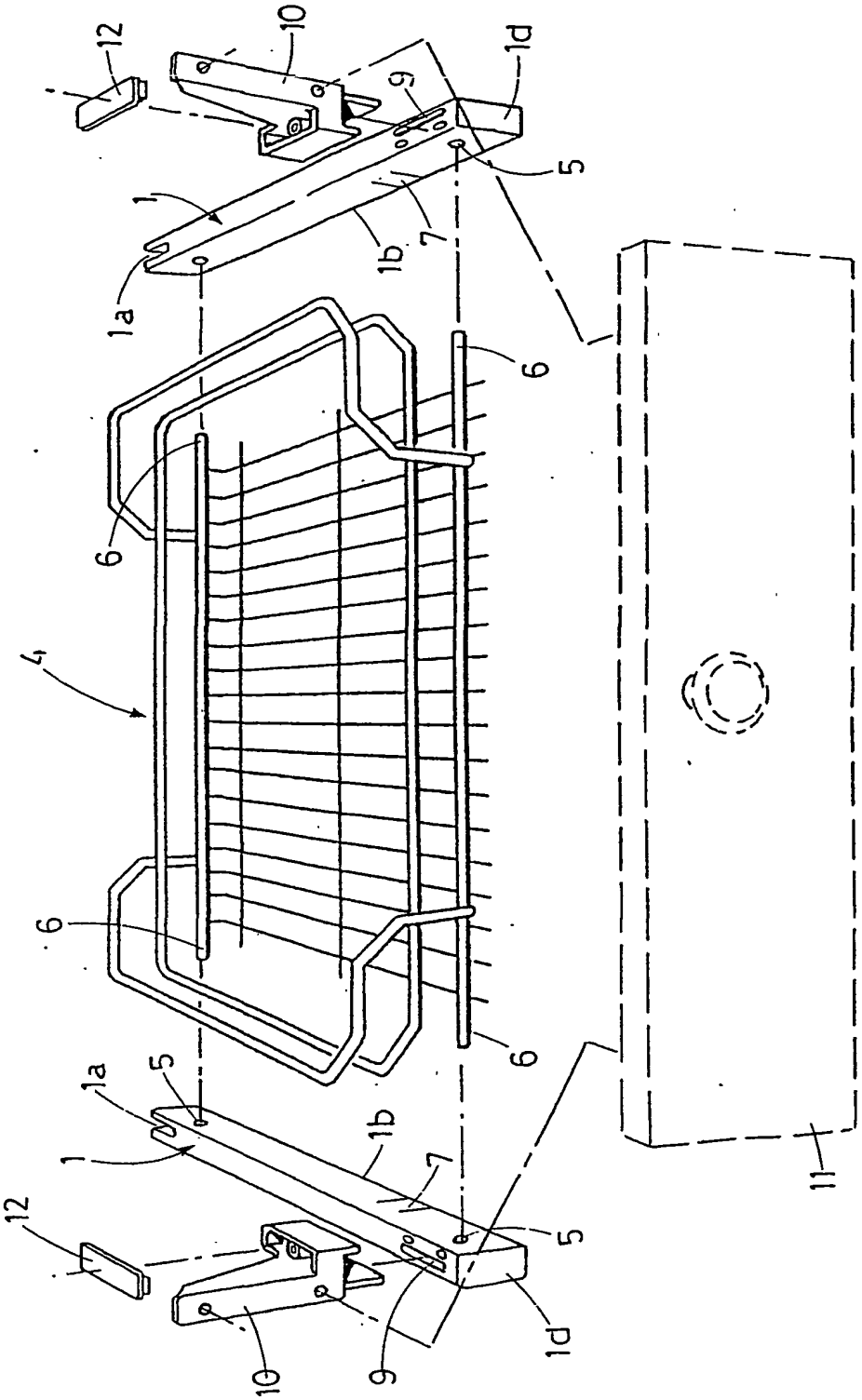

FIG. 1

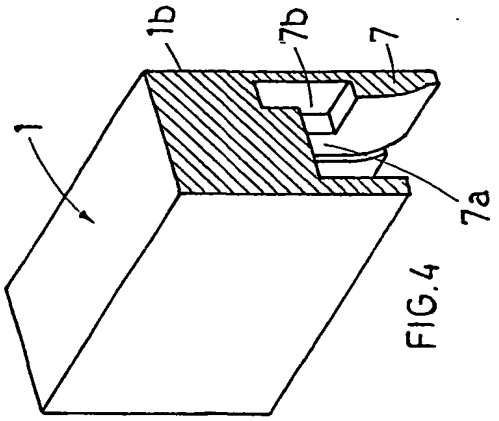

FIG.4

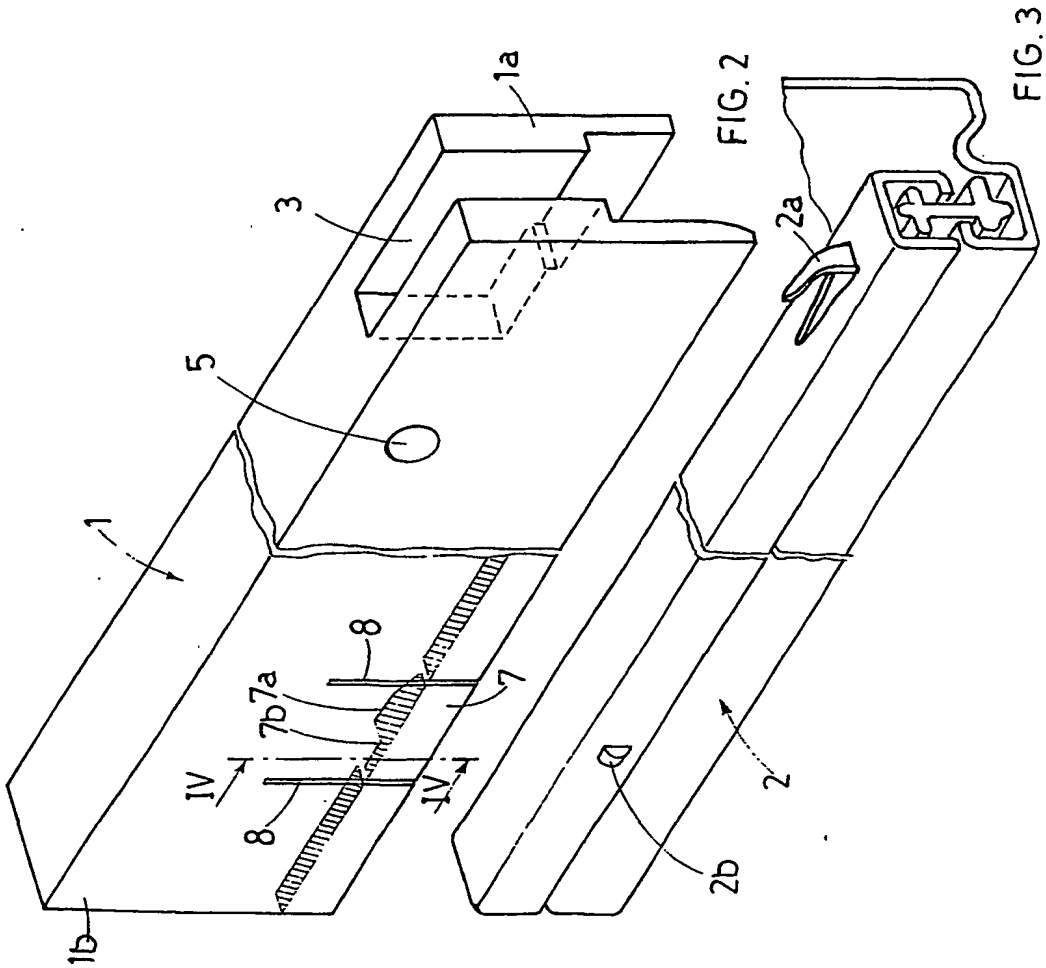

FIG.2

FIG.3

INTERNATIONAL SEARCH REPORT

Internal Application No
PCT 01/00284

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A47B88/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A47B F25D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 536 083 A (BRUESTLE KLAUS ET AL) 16 July 1996 (1996-07-16) abstract; figures	1-6
A	DE 89 04 370 U (HAGENHENRICH & CO KG) 18 May 1989 (1989-05-18) figures	1-6
A	DE 296 14 997 U (KESSEBOEHMER DRAHT & METALL H) 10 October 1996 (1996-10-10) figures	1-6
A	US 5 472 270 A (CZARNECKY JOSEPH A ET AL) 5 December 1995 (1995-12-05) abstract; figure 5	1-6

☐ Further documents are listed in the continuation of box C.

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° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
28 August 2001	10/09/2001

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Ottesen, R

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
IT 01/00284

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5536083 A	16-07-1996	AT 400218 B	27-11-1995
		AT 402601 B	25-07-1997
		AT 41293 A	15-03-1995
		AT 197755 T	15-12-2000
		CA 2116203 A	05-09-1994
		CA 2116795 A	05-09-1994
		DE 59409596 D	04-01-2001
		EP 0613639 A	07-09-1994
		EP 0613640 A	07-09-1994
		ES 2152268 T	01-02-2001
		JP 2722167 B	04-03-1998
		JP 6315419 A	15-11-1994
		US 5395169 A	07-03-1995
		AT 7194 A	15-11-1996
DE 8904370 U	18-05-1989	NONE	
DE 29614997 U	10-10-1996	NONE	
US 5472270 A	05-12-1995	CA 2153102 A	06-01-1996

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION** see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
Comp/MC00A49		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/IT 01/00284	04/06/2001	06/06/2000
Applicant		
COMPAGNUCCI - S.P.A. et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language,** the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

[ ] the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

[ ] contained in the international application in written form.

[ ] filed together with the international application in computer readable form.

[ ] furnished subsequently to this Authority in written form.

[ ] furnished subsequently to this Authority in computer readble form.

[ ] the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

[ ] the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. [ ] **Certain claims were found unsearchable** (See Box I).

3. [ ] **Unity of invention is lacking** (see Box II).

4. With regard to the **title,**

[X] the text is approved as submitted by the applicant.

[ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

[X] the text is approved as submitted by the applicant.

[ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 1

[X] as suggested by the applicant.

[ ] None of the figures.

[ ] because the applicant failed to suggest a figure.

[ ] because this figure better characterizes the invention.

INTERNATIONAL SEARCH REPORT

International Application No
IT 01/00284

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Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Ottesen, R

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
[redacted]IT 01/00284

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		AT 402601 B	25-07-1997
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		DE 59409596 D	04-01-2001
		EP 0613639 A	07-09-1994
		EP 0613640 A	07-09-1994
		ES 2152268 T	01-02-2001
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DE 29614997 U	10-10-1996	NONE	
US 5472270 A	05-12-1995	CA 2153102 A	06-01-1996